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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/518,475	12/20/2004	Torbjorn Ling	02386.0096	3599

22852 7590 12/23/2008

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EXAMINER	
LUK, EMMANUEL S	

ART UNIT	PAPER NUMBER
1791	

MAIL DATE	DELIVERY MODE
12/23/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/518,475	LING ET AL.	
	Examiner	Art Unit	
	Emmanuel S. Luk	1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 December 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *13,14 and 16-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *13,14 and 16-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 13-14, 16, and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chou (WO 00/00868, see IDS) in view of Weimer (2003/0056855) and Phipps (4120995).

Chou teaches the use of release materials in lithographic apparatus and method for creating ultra-fine patterns (sub-25 nm) in a thin film on a substrate from a mold (see abstract). Chou teaches a coating of molecules from a specific type of reactive compound, the compound having a halogen or cyano element, especially Cl, F, or Br (see page. 8, line 22), silane is also mentioned (pg. 18, lines 21-31). The mold surface can be of any surface to which the release providing molecules may bond (pg. 10, lines 3-4), the release surface may be metallic, or metal oxides, as is known in the molding art (pg. 10, lines 5-9) and example given of Si, Ti, Zr, Cr, Ge (pg. 9, lines 25-27). The mold layer 14 having a plurality of features 16 and having a release layer 17 bonded to the surface of the features on the molding layer (pg. 11, line 16 to pg. 12, line 33).

Chou fails to specifically teach the process of applying the metal layer, oxidizing the layer of metal to form an oxide film and then applying the reagent on the oxide film.

Weimer teaches a process of applying a substrate to an element, the substrate formed of an alloy that can include titanium, zirconium, and chromium, see [0024]. The

substrate being oxidized, to produce an oxide layer 78, such as chromium oxide or titanium oxide, see [0031]. The oxide layer being a protective layer for the article such as preventing corrosion, see [0033] to [0034]. Chou teaches an metal or oxide layer and for that layer to be placed, it would have been obvious for one of ordinary skill in the art to utilize the process of Weimer for forming an oxide layer. The oxidation step can be done in an air atmosphere, or in an oxygen only atmosphere, see [0010]. The thickness of the oxide layer can be from 500 angstroms thick (50 nm) to 1000 angstroms (100 nm), see [0030]. Weimer being a mechanically stable oxide film as it is used for industrial use to prevent corrosion upon the element.

Phipps teaches a process of bonding a durable low surface energy coating to a metal or oxide surface, the coating being a fluorinated alkyl group, that includes: R_f-O-$(CH_2)_n$-Si-X, which also includes a silane group. The fluorinated alkyl group imparts coating durability and a low surface energy to the element, see Col. 1, lines 6-19).

It would have been obvious for one of ordinary skill in the art to modify Chou with the step of having the metal oxide through a well known step of metal oxidation as taught by Weimer so that it is protective against corrosion or oxidation, and to further apply a low energy coating that would bond with an oxide film such as the process taught by Phipps thereby forming a durable low surface energy coating that is tightly bonded to an oxide surface (Col. 1, lines 6-8).

3. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chou (WO 00/00868, see IDS) in view of Weimer (2003/0056855) and Phipps (4120995) as

applied to claims 13-14 and 16-20 above, and further in view of Mattox (Handbook of deposition technologies for films and coatings: Science, technology and applications) and Jaszewski (Microelectronic Engineering 35, from IDS).

Chou and Phipps do not teach the metal is furnished to the surface in an evaporated form.

Mattox teaches the construction for surface materials including oxidizing techniques (p. 87), the sputtering of the material, of film materials (p. 83) in different gas environments. It is known in the art that the metal oxide layer can be as thin as 50 to 1000 nm, (as seen in background reference, Breen US 6,380,101).

Jaszewski teaches the different applications of such as sputtering or plasma polymerized of the films onto a metal surface (p. 381, experiment 2.1).

One would be motivated to use Chou, Mattox, and Jaszewski, since all pertain to construction of layers. Both Chou and Jaszewski discuss a protective layer on a metal layer while Mattox deals with the construction of surface layers. All are relevant to one skilled in the art for films and coatings particularly for the creation of microstructures.

It would have been obvious for one of ordinary skill in the art to modify Chou in view of Phipps with the formation of the metal layer as taught by Mattox as one means of depositing a metal, and the application using sputtering or plasma onto a surface as taught by Jaszewski for application of the thin film layer, thus it is furnished in an evaporated form.

4. Claims 21, 22, and 25 are rejected under 35 U.S.C. 103(a) as obvious over Chou (WO 00/00868, see IDS) in view of Phipps (4120995).

Chou teaches the use of release materials in lithographic apparatus and method for creating ultra-fine patterns (sub-25 nm) in a thin film on a substrate from a mold (see abstract). Chou teaches a coating of molecules from a specific type of reactive compound, the compound having a halogen or cyano element, especially Cl, F, or Br (see page. 8, line 22), silane is also mentioned (pg. 18, lines 21-31). The mold surface can be of any surface to which the release providing molecules may bond (pg. 10, lines 3-4), the release surface may be metallic, or metal oxides, as is known in the molding art (pg. 10, lines 5-9) and example given of Si, Ti, Zr, Cr, Ge (pg. 9, lines 25-27). The mold layer 14 having a plurality of features 16 and having a release layer 17 bonded to the surface of the features on the molding layer (pg. 11, line 16 to pg. 12, line 33). Claim 21 states that the metal has been applied to the surface and then brought to oxidise and then applying the anti-adhesive layer. These are process limitations to making the apparatus and Chou already teaches the claimed structure and it would have been obvious to one skill in the art that any process can be used to create a structure, therefore Chou teaches this claimed structure.

Chou fails to specifically teach the anti-adhesive layer being chemically bonded to the metal oxide film.

Phipps teaches a process of bonding a durable low surface energy coating to a metal or oxide surface, the coating being a fluorinated alkyl group, that includes: R_f-O-

$(CH_2)_n$-Si-X, which also includes a silane group. The fluorinated alkyl group imparts coating durability and a low surface energy to the element, see Col. 1, lines 6-19).

It would have been obvious for one of ordinary skill in the art to modify Chou to apply a low energy coating that would bond with an oxide film such as the process taught by Phipps thereby forming a durable low surface energy coating that is tightly bonded to an oxide surface (Col. 1, lines 6-8).

In regards to the mechanically stable oxide film layer, this is considered inherent for the oxide layer in Chou since it is a release layer upon the surface of the apparatus.

5. Claims 23, 24, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chou (WO 00/00868, see IDS) in view of Phipps as applied to claims 21, 22, 25, and 27 as shown above, and further in view of Breen (6380101).

Chou in view of Phipps teaches the claimed apparatus as shown in the rejection above of claims 21, 22, 25, and 27. Chou fails to teach the specific thicknesses.

Breen teaches a metal oxide layer having a thickness of 50 to 1000 nm.

One would be motivated to use Chou and Breen since both pertain to apparatus that create micro and nanoscale surfaces, and both pertaining to metal layers having a protective anti-adhesive layer. Both teach the use of a protective layer on a metal layer and thus both are relevant to one skilled in the art for films and coatings particularly for the creation of microstructures. Thus, it would have been obvious for one of ordinary skill in the art to modify Chou with the thickness of the metal oxide layer as taught by Breen.

Response to Arguments

6. Applicant's arguments with respect to claims 13, 14, 16-26 have been considered but are moot in view of the new ground(s) of rejection. Applicant's argument concerning a mechanically stable oxide film and to bond with at least one reagent on the oxide film have been considered. However, processes of applying and oxidizing to form a 'mechanically stable' oxide film is known, especially since it is known to have an oxide film to prevent corrosion on a surface, such as for gas turbines. Hence there are well known industrial applications for having a mechanically stable oxide film on a surface. In addition, Chou teaches a metal oxide layer as part of the release layer and it would need to be 'mechanically stable' to be able remain as a layer for the apparatus to function. The process of bonding a reagent to an oxide film has been known at least since 1978 (Phipps reference) and one skilled in the art would be aware of such applications of durable low energy surface coatings to a surface.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emmanuel S. Luk whose telephone number is (571)272-1134. The examiner can normally be reached on Monday-Fridays from 9 to 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yogendra N. Gupta can be reached on (571) 272-1316. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

EL

/Joseph S. Del Sole/
Supervisory Patent Examiner, Art Unit 4152